Restricted

NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

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Immunizations Preparatory to Departure Overseas by Aircraft: Air travel by small groups of naval personnel on detached duty is becoming more and more common. As a part of his regular duty, the medical officer of the naval activity from which such a group is to be detached is expected to foresee the immunizations which will be required for the group in the various areas to be visited and to provide the necessary immunizations before embarkation. Although the effort to foresee the needs of such a group may prove somewhat difficult, the effort should nevertheless be made, not only in order to prevent the possible occurence of certain diseases but also to obviate the delay and confusion caused by the failure of any members of the group to meet the varied immunization requirements of the areas visited. As an aid to the naval medical officer in his effort to meet this additional responsibility effectively, the following suggestions are offered:

(1) Check the "generally required" inoculations (Bumed News Letter, Vol. 1, No. 4, April 16, 1943) with these points in mind:

(a) If smallpox vaccination has not been received within a year prior to departure, inoculate.

(b) If the original series of 3 subcutaneous injections or a repeat inoculation of 0.1 c.c. of typhoid-paratyphoid vaccine intracutaneously has not been received within a year prior to departure, inoculate.

(c) If the original series of 2 intramuscular injections of 0.5 c.c. of alum-precipitated tetanus toxoid has not been received, or has been received more than 1 year prior to departure and the usual booster dose has not been received, inoculate.

(d) If the original subcutaneous injection or the repeat inoculation of 0.5 c.c. of yellow fever vaccine subcutaneously has not been received within 2 years prior to departure, inoculate. (Yellow fever vaccinations of personnel enroute to India should be given at least 14 days before embarkation.)

(2) Obtain the projected itinerary of the group and determine whether it includes areas in which plague, cholera, or louse-borne-epidemic typhus fever is endemic. ("Notes on Tropical and Exotic Diseases of Naval Importance" contains in its 1943 edition maps of the world showing in color the distribution of the important diseases. This publication was distributed to all naval medical officers by the Naval Medical School, National Naval Medical Center, Bethesda, Maryland. "Health Precautions for Personnel on Detached Duty" lists the main disease hazards for the chief countries of the world. Copies of this publication are available upon request to BuMed.)

(3) Determine which of the "specially required" inoculations will be needed with these points in mind:

(a) Groups destined for Europe, Africa, Asia or South America should receive an original series of 3 subcutaneous injections or a repeat inoculation of 1 c.c. of typhus vaccine subcutaneously within 6 months prior to departure.

(b) At the present time there appears to be no valid reason for immunizing, with typhus vaccine, naval personnel destined for the Central Pacific, South Pacific or Southwest Pacific areas.

(c) Cholera vaccination is recommended for groups destined for Egypt and points east. This should include an original series of 2 injections subcutaneously or a repeat inoculation of 1 c.c. of cholera vaccine subcutaneously within 6 months prior to departure.

(d) Plague vaccination is recommended for groups destined for Morocco, Egypt, Palestine, Iran and India. This should include an original series of 2 injections subcutaneously or a repeat inoculation of 1 c.c. of plague vaccine subcutaneously within 4 months prior to departure.

(4) Complete the Health Record of each member of the group, adding the record of the recently received inoculations upon the Medical Abstract Sheet (Form H-3).

(5) Provide each member of the group with a duplicate copy of his immunization record (Medical Dept. Form H-3) properly prepared and available for examination prior to departure from his home base in the Continental United States for overseas destinations. (D.F.S.)

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Superiority of Liquid Petrolatum in the Removal of Fuel Oil from Burns and Wounds: A comparative study has been made at the Naval Medical Research Institute of the forty-four most promising detergents, oil mixtures, and oils, including liquid petrolatum and coconut oil.

The findings indicate that liquid petrolatum is the best all-around agent at all temperatures for the practical removal of fuel oil from intact skin, wounds and burns.

In view of this finding and the fact that liquid petrolatum is available in practically all naval units afloat and ashore, one may question the need for procurement and distribution of special detergent preparations for the purpose of removing fuel oil from burns and wounds. (N.M.R.I. Project X-195.)

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Primary Treatment of Severed Nerves: When a major nerve trunk is cut, its ends, if left alone, retract to a surprising extent. In the ultimate repair of these cases at the Chelsea Naval Hospital three to nine months after combat wounding, Captain J. C. White (MC), USNR, has found that the gap between the proximal and distal neuromata has varied between 1-1/2 and 4 inches. Defects in nerve continuity of this extent are difficult to repair and may necessitate primary suture of end-bulbs with subsequent stretching and secondary nerve suture, nerve grafting, or even shortening of the limb. Procedures of this sort entail an enormous increase in the period of hospitalization as well as a greatly reduced chance of functional recovery. Retraction of the severed endings varies with the amount of tissue initially destroyed and the subsequent inflammatory reaction. Even when a nerve is divided cleanly by a bullet or a minute metallic splinter, a two-inch separation is likely to occur. A great deal can be done by the surgeon who does the primary debridement to minimize the extent of this gap without appreciably increasing the operating time or the risk of subsequent infection. With this possibility in mind Captain White makes the following suggestions:

1. Enter in the Health Record the type of nerve injury. Is the interruption partial or complete? What is the primary extent of separation of the severed ends?

2. Whenever it is possible by flexion of the wrist, elbow, or knee to approximate the two cut ends, stitch them together by one or two sutures through the full thickness of the stumps. Fine, stainless steel wire is ideal: because, if there is secondary infection, it does not act as a foreign body; also, because it forms an X-ray marker of the exact point of injury. If no wire is available, use the finest silk or even "OO" chromic catgut sutures to prevent separation of the approximated stumps. Suturing of this sort will not be followed by satisfactory regrowth, nor will it even reduce neuroma formation, but, if it prevents retraction of the stumps, a great deal will be gained. Sulfanilamide can be dusted directly into the wound, but not sulfathiazole, as the latter is an irritant to nerve tissue. Immobilize the extremity in a plaster cast.

3. When direct approximation of the nerve stumps is impossible, tack them down loosely on the underlying fascia or muscle, approximating them as closely as possible. Here again fine wire sutures are ideal, as they mark the exact point on an X-ray film. When these are not available and silk or catgut is used, break off the tip of a needle (1 to 2 mm. in length) and anchor it in the tissue alongside the proximal and distal stumps as a marker. Sutures and improvised markers of this type may slough out, but if they do so, no damage is done, and if retained much has been gained.

Tacking the nerve ends down in this fashion can be done even in the presence of mild infection provided the nerve stumps are found exposed in the wound. If preliminary handling is properly carried out, all that will be necessary in the final repair will be to trim back the scarred ends and perform an end-to-end suture. This can be done with a minimal degree of neurolysis, and the problem of securing sufficient slack to avoid tension on the suture line will be enormously simplified.

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Erratum: In the Bumed News Letter of March 3, 1944, the page numbered 25 should have been numbered 26, and vice versa.

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Local Treatment of Minor Burns: McClure and Lam have recently completed a survey regarding the treatment of minor burns occurring among the 250,000 employees of three of the large automobile companies of Detroit. Analysis of the answers to a questionnaire sent to the industrial surgeons involved revealed that 84 different substances were used in the local treatment of 7,608 cases of minor burns. The authors state that, regardless of what is put on the

average minor industrial burn, it is apt to be healed within a week. Some of the ointments more commonly employed were tabulated as to the average number of days required for healing when they were used. The results were as follows:

Remedy	Days for Healing	
Tannic Jelly	7.0	
Zinc Oxide Ointment	6.4	
A Shotgun Proprietary Preparation Containing 11 Drugs.	6.3	
Foille (A Proprietary Water-in-Oil Emulsion prepared by Processing Several Drugs in a Vegetable Oil Base)	5.9	
Sulfonamide Ointment	4.1	
Vitamin A-D Ointment	3.2	
Boric Acid Ointment	2.5	
Petrolatum	2.0	(J.A.M.A., July 31,'43.)

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The Role of the Sodium Ion in the Therapy of Shock: Considerable interest has been aroused in recent months by the experiments of Rosenthal in the treatment of shock in mice by means of the administration of sodium salts. In the Bumed News Letter of March 5, 1943, Rosenthal's early experiments in burn shock were mentioned. A more complete summary of his work appeared in the News Letter of October 1, 1943. There it was reported that Rosenthal had found that in mice subjected to a standard burn of a degree fatal to 97 per cent of the animals when untreated, only 5 per cent died when any one of a number of isotonic sodium salts was administered by mouth. An abstract of a later paper by Rosenthal appeared in the Bumed News Letter of November 26, 1943. In this he reported similar satisfactory reduction of mortality by the use of sodium salts in mice in which shock had been produced under uniform conditions by the tourniquet method.

Recently Rosenthal has been carrying out some experiments with regard to the treatment of hemorrhage shock with sodium salts. Mice were subjected to standard hemorrhage by cutting off the ends of their tails and immersing the proximal ends in citrate solution. Fatal hemorrhage was carried out in two stages, therapy being administered between the bleedings. Sodium chloride, when given in 0.9 per cent solution in quantities equivalent to 8 per cent of the body weight, resulted in survival of the majority of the animals. No difference in efficacy was found between the oral and intravenous routes of administration. Sodium lactate in milliequivalent solutions was as effective as sodium chloride.

The sodium salts were found to be superior to plasma but inferior to whole blood. Whole blood was three times as effective as an equal amount of sodium lactate solution. It is therefore apparent that in experimental shock in mice produced by hemorrhage, burn or trauma, sodium salts possess emergency therapeutic efficiency, as measured by reduction in mortality, when given orally or intravenously in adequate amounts. (Rosenthal, To be published in Pub. Health Rep.)

Not enough experimental work has yet been done to justify drawing definite conclusions as to the efficacy of sodium salts in the treatment of shock in man.

In the Journal of the American Medical Association of January 22, 1943, Fox reported the treatment of shock in a number of badly burned individuals by the oral administration of sodium lactate. No plasma or other blood substitute was given. In the series reported only one patient out of 17 died. However, at a recent meeting of the National Research Council Subcommittee on Shock, several members working in conjunction with Dr. Charles Fox reported 7 burned patients treated exclusively with sodium lactate solution by mouth or stomach tube. Five died (four unnecessarily, the attending physicians thought), one was not seriously burned (15 per cent burn), while one (40 per cent burn) recovered with the aid of saline intravenously and had a prolonged convalescence, anemia and hypoproteinemia. One of those dying (30 per cent burn) had survived the initial injury and relapsed in the second week with severe anemia, tachycardia and high fever. Reinstitution of sodium lactate therapy was followed by death in 48 hours from acute pulmonary edema. Most patients were given 4-10 liters of lactate in 12-24 hours. Many vomited and required administration of lactate via stomach tube. Usually they relapsed about 6 hours after treatment began, one requiring saline intravenously to restore blood pressure. All attained CO_2 combining powers of over 80 vol. per cent very quickly and several had clinical alkalosis with tetany.

It is apparent, therefore, that Fox's paper does not present an unbiased view of the present status of the experimental application to human beings of Rosenthal's work with mice. Fox's sweeping conclusions as to the value of this method are premature and uncritical. Further studies are in progress or projected in a number of civilian clinics. It is hoped that more information will be forthcoming as to the true value of this form of treatment and that these studies will advance our knowledge with respect to the mechanism of shock.

Sodium salts cannot be expected to counteract the loss of protein, as in burns or hemorrhage, or the loss of blood cells and hemoglobin.

The experimental treatment of shock due to hemorrhage, burn or trauma, by sodium salts alone should be attempted only in clinics equipped to do research on this problem. It has no place at the present time in military field surgery. However, there is enough evidence at hand to justify the administration of sodium

salts to patients as an adjunct to plasma therapy and where blood plasma or serum albumin is not available. As salt tablets are usually available, their addition to canteen water in proper amount will provide a supply of physiological saline much to be preferred to water for oral administration to patients in shock. (L.R.N. - S.T.G.)

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The Importance of Whole Blood Transfusions in Battle Casualties: Many of the reports received by the Bureau from combat areas emphasize the value of transfusions of whole blood in the treatment of battle casualties.

Plasma is an efficient hemodynamic blood derivative in the emergency treatment of shock because its administration is followed by an increase in circulating blood volume. It is of use also in the nutrition of patients who are unable to take food by mouth, as when given parenterally it provides an appreciable supply of protein. Its unique value lies in the facts (a) that it can be preserved for long periods of time without deteriorating, (b) that it can be administered without preliminary crossmatching, and (c) that for these reasons it can be made almost universally available for immediate use.

Plasma is usually preferred to whole blood in the treatment of burn shock during the stage of hemoconcentration. This preference is based on the fact that plasma is more efficient than whole blood in reducing the hemoconcentration and consequent increase in blood viscosity of this condition because through its osmotic action it draws interstitial fluid into the blood stream. However, at a conference on shock at the National Research Council on December 1, 1943, it was the consensus that when plasma was not available, whole blood was not contraindicated in early shock due to burns. (1)

Most injuries sustained in battle are characterized by considerable hemorrhage, and it has been shown that in extensive burns there is significant destruction of red blood cells. (2) Therefore, most severely injured or burned individuals are found after restoration to normal of their blood volume to have a reduction in the number of circulating red blood cells and in the amount of circulating hemoglobin.

At first this anemia has a deleterious effect on the individual through reduction in the amount of oxygen delivered to the tissues. The tissues, already suffering from hypoxia resulting from the recent circulatory failure, are now subjected to an hypoxia from another cause: reduction of the oxygen-carrying capacity of the blood.

After correction of the hemoconcentration, transfusion with whole blood should be resorted to as soon as it is available in order to provide enough

hemoglobin to overcome the hypoxia which may exist in spite of normal circulatory dynamics.

Persistent infection aggravates the anemia by inhibiting the formation of red blood cells. Increased red cell formation, as demonstrated by reticulocytosis, follows control of the infection or can be stimulated by whole blood transfusion. (3) Hemoglobin regeneration does not take place unless there is active red cell formation; therefore, particularly in the presence of infection, it is essential that transfusions of whole blood be given. Hemoglobin can be utilized by the body to form new hemoglobin when it is given by vein, as in a whole blood transfusion.

The formation of hemoglobin may be modified adversely by other factors such as reduction in stores or intake of protein and iron. It may be inhibited by infection. Burns and other injuries are usually associated with loss of large amounts of body protein. Not only may there be significant loss of blood and plasma, but also there is extensive tissue destruction with breakdown of protein and excretion in the urine of an excess of nitrogen. It is obvious that nitrogen balance should be maintained in order that the supply of protein be adequate for the synthesis of new hemoglobin. "Hemoglobin in its production may draw on the plasma protein but hemoglobin stands apart in the protein economy and does not contribute freely to the protein pool. On the other hand, the body guards jealously the fabrication of hemoglobin and given a real need for both plasma protein and hemoglobin, the protein flow favors hemoglobin, which under these circumstances always is produced in more abundance than is plasma protein." (4) Therefore, amino acids and plasma protein needed for repair of damaged tissues and for restoration of wasted tissues are diverted to the formation of hemoglobin when there is a deficiency in circulating hemoglobin. Thus, anemia tends to aggravate wasting and to retard healing.

In addition to supplying elements needed to overcome the anemia, whole blood supplies utilizable plasma proteins including immune substances useful in combating infections. The practical value of repeated whole blood transfusions in correcting the anemia following serious battle injuries is well recognized clinically and their use is clearly justified on theoretical grounds.

(1) Conference of Subcommittee on Shock, National Research Council, Dec. 1, '43.
(2) Shen, Ham and Fleming, New England J. Med., Nov. 4, '43. (abstracted Bumed News Letter, Dec. 10, '43.)
(3) Lyons: Observations upon the Anemia of Chronic Sepsis (Preliminary Report to Office of Surgeon General, U. S. Army).
(4) Whipple, Am. J. M. Sci., Apr. '42.

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Thiourea and Agranulocytosis: Thiourea and thiouracil were mentioned in the Bumed News Letter of June 11, 1943, as substances which, when administered to experimental animals, lowered the basal metabolic rate, and when administered to patients with hyperthyroidism, produced a remission of their symptoms.

Recently, Newcomb and Deane have reported a patient who developed severe granulocytopenia and thrombocytopenia in the course of the administration of thiourea, and Welshman described two cases in which thiouracil seemed to produce leukopenia and granulocytopenia.

The use of these drugs in the treatment of hyperthyroidism in humans is still in the experimental stage. (Lancet, Feb. 5, '44.)

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Goitrogenic Substances: The recent literature has contained a number of reports regarding the goitrogenic properties of various chemical compounds. Thiourea, thiouracil, thiocarbamide, potassium thiocyanate, and sulfonamides have produced in animals a syndrome characterized by hyperplastic goiter with hypofunction of the thyroid gland. Hyperplastic goiter has occurred in humans in the course of the treatment of hypertension with potassium thiocyanate. One of these cases developed exophthalmos. Ranson, in Means' Laboratory, treated rats with sulfathiazole and found that they developed both hyperplastic goiter and exophthalmos. It is believed that these substances impose some obstruction to the completion of the elaboration of thyroid hormone. Means (Am. J. M. Sci., Jan. '44.) has presented evidence that exophthalmos is related to a thyroid-pituitary secretory imbalance in which the thyrotropic hormone of the pituitary gains the ascendancy. It is known that the thyrotropic-pituitary hormone is inhibited by thyroid hormone. The effect of these drugs in preventing the formation of thyroid hormone may be to release from its normal inhibition the thyrotropic hormone of the pituitary, and this may be not without danger.

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Function of Vitamin C in Man: Pijoan and Lozner, in a paper to be published in the New England Journal of Medicine, give an excellent review of the function of ascorbic acid in the body economy and present some interesting additional observations bearing on laboratory evaluation of vitamin C deficiency and on human requirements for this substance.

The Scorbutic Process: A review of the literature on scurvy leads the authors to the following conclusions: In man, other primates and guinea pigs, prolonged lack of sufficient ascorbic acid in the diet produces scurvy. It is assumed with good evidence that the other animals must be capable of synthesizing a part of or all of their requirements. However, at no time during the life cycle of man is it known that synthesis of ascorbic acid takes place.

The scorbutic process is dependent on the depletion of ascorbic acid in animal tissues and the resultant morphological change in the intercellular substance of certain mesenchymal derivatives.

In the scorbutic animal the ground substance and fibroblasts are present as in the healthy animal, but collagen is not formed. The exact mode of action of ascorbic acid is not known. The intercellular substance of bone (osteoid tissue) and of teeth (dentine) may be similarly affected by withdrawing ascorbic acid. In scurvy all tissues lose collagen. As a result of weakness either in the sheath or in the endothelial cement substance, the vessels become more fragile and rupture easily upon application of trauma or even "spontaneously." As a result, hemorrhages occur, there is fragmentation of muscle fibers, and an intense reparative effort is evidenced in the sarcolemma by the striking multiplication of cells. The gums, lacking cement substance, become boggy and swollen; secondary infections may occur.

Stress modifies and to some degree determines the site of the gross lesions. Lesions are further modified by growth. For instance, in infants bone changes are most striking, but in adults they are almost entirely lacking. Multiple periosteal hematomata become less and less frequent as the age of the patient increases. Other lesions include blood-stained effusions into the body cavities. There may be bloody diarrhea.

Clinically, the scorbutic manifestations are often mixed with other nutritional deficiencies and the picture may be modified somewhat. Rather prominent is the anemia that is often associated with scurvy. Recent work, however, tends to show that the anemia is most often related to a low iron intake or blood loss. It can generally be corrected by the administration of therapeutically active iron salts.

Other investigations have tended to show that ascorbic acid exerts an effect on certain specific enzymes, that it acts as a hydrogen transport agent or a respiratory catalyst and that it is an inhibitor in the adrenalin-adrenochrome oxidation in heart tissue, but these findings have not been conclusively demonstrated in vivo and in the main are fortuitous observations in vitro.

The Laboratory Evaluation of Vitamin C Deficiency and Its Relation to Human Requirements: The authors describe an experiment by Crandon in which he induced scurvy by placing himself on a vitamin-C-free diet. His ascorbic-acid plasma level dropped to zero within 41 days and remained at zero for a period of 13 weeks before the signs of scurvy appeared. On the other hand, the white cell-platelet layer level did not fall to zero until just prior to the advent of the first signs of scurvy.

Butler and Cushman have observed that the ascorbic acid content of the white cell-platelet layer of centrifuged blood is probably the most accurate

indicator of the pre-scorbutic status. These investigators found that this level may be well within normal limits (25-38 mg. ascorbic acid per 100 Gm.) even in the presence of a very low plasma level. The level in these cells apparently represents actual tissue stores of this vitamin. Thus, plasma values of zero do not necessarily indicate a scorbutic process unless such values exist concomitantly with a deficiency of the white cell-platelet content. It would appear from these studies that a fixed plasma value, no matter how low, provided some is present, indicates a positive ascorbic acid economy. Should the plasma values continue to drop, but, and this is of even greater importance, should the white cell-platelet values drop, a shortage of the vitamin in the dietary must be suspected.

The authors believe that there is no clinical justification for the idea that a plasma level above 0.7 mg. per cent is necessary for optimum health.

Whole blood values, indicating a combination of what exists in the plasma, the red cells, and particularly the white cell-platelet layer, will also be a better index than cell-free plasma and will fall gradually on a scorbutic diet until such time as the traces of ascorbic acid in the white cells and platelets are sufficiently low to be unmeasurable when diluted by the plasma and red cells.

It should be emphasized that the diagnosis of scurvy made without clinical signs and solely on the basis of laboratory procedures can never be justified. On the other hand, a pre-scorbutic state based on depleted white cell and platelet values as an index is warranted because it is during this period that Crandon noted fatigue and weakness as well as certain other changes.

The authors conclude that vitamin C excretion in the urine and saturation tests have no place either as diagnostic tests for scurvy or as criteria for the therapeutic administration of ascorbic acid. Re-absorption of ascorbic acid by the kidney tubule, unless complete saturation is present, interferes with the value of the former, and the latter test is of no use in view of the fact that any fixed value at all in the plasma indicates a state of positive ascorbic acid economy.

The Relationship of Ascorbic Acid to Wound Healing: Wounds of scorbutic guinea pigs heal slowly and with poor tensile strength. This is true also of the frankly scorbutic human subject. On the other hand the evidence that ascorbic acid is necessary for wound healing in the non-scorbutic subject has no foundation whatsoever. Crandon, after three months of an ascorbic-acid-free diet, and with no plasma ascorbic acid for several months, had perfectly normal wound healing as revealed by biopsies of an experimental incision. It was only after he had developed clinical scurvy that wound healing was impaired.

One of the authors made observations on an adult male who remained on a low vitamin C intake for 20 months. The average intake was 16 mg. per day for 20 months, and at no time was it more than 25 mg. or less than 12 mg. The

plasma ascorbic acid value had remained for the most part at zero with occasional increase, never exceeding 0.2. The white cell-platelet layer levels, on the other hand, always exceeded 25 mg. per 100 Gm. At the end of this period while persisting on the same diet, a wound was made in the left midback of the subject: an incision 2.5 cm. in length and 1 cm. in depth into the subcutaneous tissue. Ten days later biopsy revealed normal healing with ample intercellular substance and capillary formation.

It is thus evident that a daily ascorbic acid dietary intake of between 12 and 25 mg. which maintained a very low plasma level but a value of 25 mg. per 100 Gm. in the white cell-platelet layer was sufficient to produce adequate wound healing and collagen formation.

Summary: The use of ascorbic acid, either synthetic or in the diet, is for the prevention or treatment of scurvy. With the exception of its possible influence on amino acid metabolism in premature infants, no other role can be ascribed to the vitamin. A diet cannot be condemned as deficient in this vitamin unless a continued linear decline in the whole blood, white cell-platelet layer, or other tissue content of the vitamin takes place, the appearance of scurvy being conclusive evidence. Relatively small amounts of the vitamin (possibly 25 mg. or under per day) are necessary to maintain fixed blood or white cell-platelet levels. The activity of the subject in certain changes in environment may some day be shown to influence the need. So far there is no evidence that this is the case. Any static level of the vitamin in the plasma, irrespective of how little is present, indicates the absence of scurvy and a positive economy.

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Experimental Diabetes: Alloxan, a ureide of mesoxalic acid, produces, when injected into rabbits, a transient hyperglycemia followed by a severe hypoglycemia. If the latter is counteracted by repeated injections of dextrose, the animals develop a condition similar to human diabetes. (See Bumed News Letter, Aug. 7 and Sept. 17, 1943.) Dunn and his co-workers originally believed that the lesion in the pancreas was caused by overstimulation of the islets of Langerhans with overproduction of insulin and later death of the cells from overstrain.

However, Hughes, Ware and Young have recently shown that the amount of insulin known to be present in the pancreas of the normal rabbit is sufficient, when administered as a protamine-zinc preparation, to reproduce the hypoglycemic action of 200 mg. per kg. of alloxan in this animal. As they admit, such evidence is not unequivocal, but it suggests that there is no necessity to assume that alloxan lowers the blood sugar by any means other than killing islet cells which are thus made to liberate their content of preformed and stored insulin. (Lancet, Jan. 29, '44.)

Injury to the Inner Ear by Loud Tones: Hawkins, Lurie and Davis of the Harvard Medical School have recently reported the results of their experimental study of injury of the inner ear in animals produced by exposure to loud tones. The following passages are quoted from the authors' summary:

"Guinea pigs were exposed to pure tones of various frequencies at intensities of from 140 to 157 db. The effects of 500 cycles and 1,000 cycles were most completely explored. Severe and extensive damage to the cochlea may be caused by loud tones without apparent injury to the eardrum, ossicles or vestibular apparatus. The least detectable anatomical damage to the inner ear, i.e., the disappearance of mesothelial cells from a limited area of the lower surface of the basilar membrane, was produced by 1,000 cycles at 140 db. for 3 minutes. More severe and extensive damage is produced by more intense tones and by longer exposures, and includes degenerative changes in the sensory cells, rupture of the organ of Corti and dislocation of the organ of Corti from the basilar membrane. A few days or weeks after severe exposure that part of the organ of Corti which has been severely damaged disappears and the nerve fibers and ganglion cells degenerate.

The milder degrees of damage are localized, but a very severe exposure (150 db. for several minutes) causes widespread permanent damage. The damage tends to be located nearer the helicotrema when caused by low tones and nearer the oval and round windows when caused by high tones.

The electrical activity of the cochlea (Wever and Bray effect or aural microphonics) is impaired by exposures which cause definite anatomical changes in the inner ear. There is some general correspondence between diminution in auditory acuity as measured by the 'electrical audiogram' and the degree of anatomical damage, but the parallelism is not exact or invariable. The anatomical changes are the more consistent of the two.

Normal cats are far more resistant than guinea pigs to injury of the inner ear by intense sounds, but severe lesions have been produced in anesthetized animals.

These experiments with animals probably demonstrate the nature of the injury to human ears that would be produced by sufficiently intense continuous sounds, but they do not indicate the intensities or durations of exposure necessary to produce such injury in man." (OEMcmr-Project No. 194, Dec. 31, '43.)

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Nephrolithotomy: The Use of Fibrinogen and "Clotting Globulin": Dees describes "an entirely different approach to the problem of surgical removal of small renal calculi." His method involves the injection of a coagulable substance into the renal pelvis at open operation so that the resulting clot completely

fills the pelvis and forms a perfect mold of all its ramifications. Within this coagulum are incorporated all free renal calculi. The coagulum, together with all stones enmeshed within it, may then be removed through a pyelotomy incision.

The coagulum Dees employs is fibrinogen obtained from human plasma. Fibrinogen is that fraction of plasma globulin which reacts with thrombin to form fibrin, and is soluble in normal saline solution but insoluble in water. It is rapidly converted into a fibrin clot by the addition of thrombin or clotting globulin. Fibrinogen solution may be sterilized by passage through a Seitz filter without altering its property of coagulation. At room temperature the solution is slowly denatured so that its ability to clot is lost within a few days. By freezing, or lyophilizing, fibrinogen solution, however, its clotting properties may be preserved for weeks or months. The supply of human fibrinogen is limited, as a liter of human plasma yields only from 40 to 50 c.c. of concentrated fibrinogen solution. As a coagulating agent Dees uses "clotting globulin." (Lederle) The coagulum is formed by the mixture of 10 parts of human fibrinogen solution and one part of 2 per cent clotting globulin. Coagulation begins approximately 30 seconds after mixing and is complete at the end of 60 seconds. Within 5 minutes after mixing, the tensile strength of the coagulum is usually from 10 to 15 times as great as that of human blood clot.

Dees' technic of operation involves exposing the kidney pelvis and upper ureter; the latter is gently occluded by finger pressure and the urine aspirated from the kidney through a number 12 catheter which has been inserted into the pelvis through a small incision. The kidney is flushed with saline, then the pelvis is lavaged with a solution of fibrinogen after which all fluid is aspirated. Fibrinogen solution is injected through the catheter into the pelvis and at the same time two per cent clotting globulin is injected by means of a syringe and needle through the wall of the catheter so that the two substances are intimately admixed as they enter the renal pelvis. After the lapse of five minutes the catheter is removed and the usual pyelotomy incision is made. The coagulum is grasped with a ring forceps and slowly but firmly withdrawn. It should remove, enmeshed within itself, all free calculi.

Dees made further studies which proved that no harm to the kidney resulted.

He had used the technic in five clinical cases (up to the time of the report) without apparent ill effect. (South M. J., Mar. '43.) (G.J.T.)

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Typing of Enteric Pathogens: The scope of the Salmonella Typing Center at the U. S. Naval Medical School (Bumed News Letter, Vol. 1, No. 7; U. S. Naval Medical Bulletin, 1943, Vol. 41, No. 4, p. 1184) has broadened to include

all of the Gram-negative, enteric pathogens. Cultures of Salmonellas, Shigellas, Paracolons, Proteus, and Pseudomonas are being identified in this special typing service.

Evidence of the pathogenicity of certain strains of Paracolon, Proteus and Pseudomonas (hitherto considered doubtful or of little importance) is being accumulated. At least one outbreak of otitis externa was apparently caused by Pseudomonas aeruginosa. At least one representative of the Paracolon group has been shown to be closely related to outbreaks of gastro-enteritis. There is good reason to believe that Proteus mirabilis has initiated several outbreaks of gastro-enteritis. Present organizations present an excellent opportunity of obtaining further information along these lines.

Most of the cultures received by the Typing Center have been isolated by laboratories at naval activities located within the United States. It is urged that, if at all possible, more cultures of suspected enteric pathogens found at activities outside the continental limits be forwarded for typing and the compilation of data.

It is expected that the epidemiology teams, especially, will find this service useful, as their aid is often sought in determining the etiology of epidemics of food poisoning.

When possible, reports on typing of cultures examined are returned within a few days after receipt of the organisms. In a few instances, particularly with Paracolons, etc., a longer period of time is required for completing the studies. The importance of an official letter of transmittal of specimens is emphasized.

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Abandon Ship with a Piece of White Line: Ensign F. A. Moody (HC), USN, writes in comment regarding the item on "Abandon Ship" in the Bumed News Letter of February 18, 1944, that at the suggestion of the late Commander J. D. Blackwood, Jr., senior medical officer, a number of men on the VINCENNES carried a sheath knife and in addition often wrapped around it a piece of white line approximately 3 to 4 feet in length, secured so that it would be small in size, yet easy to unroll when needed. This advice was followed by most of the men, and many who abandoned ship had occasion to use it. It may be used as a means of lashing one's self to a raft or other floating object, as a tourniquet for a wounded shipmate, or as a lashing for a makeshift splint.

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Care of The Wounded in Theaters of Operation: The following Circular Letter from the Office of the Surgeon General of the U. S. Army is reprinted in the Bumed News Letter for the information of Naval Medical Officers:

ARMY SERVICE FORCES
Office of The Surgeon General
Washington 25, D. C.

CIRCULAR LETTER NO. 178 23 October 1943.

Subject: Care of the wounded in theaters of operation.

1. The purpose of this letter is to provide broad policies and certain guiding principles on the care of the wounded in theaters of operation. Modification in accordance with existing conditions and changing circumstances may be necessary.

2. Principles of evacuation. a. The lightly wounded whose injury is such that treatment would permit immediate return to duty will be treated in the forward echelons (battalion aid stations, collecting and clearing stations) and will not be evacuated.

b. Patients with injuries requiring immediate operation in order to save life will be treated in forward echelons if possible.

c. With exception of above, no operations will be done in forward echelons.

d. The lightly wounded who reach a forward hospital should be held in convalescent hospitals in that area and not evacuated far to the rear.

e. So far as possible, seriously wounded patients requiring surgery should be evacuated directly to evacuation hospitals or to other hospitals acting as such.

f. Patients who, in the opinion of the responsible medical officer, cannot be returned to duty status within the period determined by the evacuation policy of the theater (at present 180 days for the European and the China, Burma, India Theaters and 120 days for all other overseas theaters, defense commands, departments, and separate bases) will be returned to the United States on the first available and suitable transportation, provided the travel required will not aggravate their disabilities.

3. Treatment. a. Wounds. (1) Soft parts. (a) Roentgenographic or fluoroscopic examination should be done preceding operation.

(b) Principles. The fundamental principles in the care of wounds are reaffirmed. Special emphasis is placed on the following:

1. Adequate exposure is essential in order to permit access to all parts of the wound. This does not mean overexcision of the skin. Very little skin need be excised but good exposure may necessitate longitudinal incision of the skin and the fascial planes.

2. Removal of:

aa. Readily accessible foreign bodies; especially important are pieces of clothing and other nonmetallic materials.

ab. Particles of bone completely separated from the periosteum.

ac. Tissue that is soiled, devitalized, or the circulation of which is impaired (especially certain muscles such as vastus intermedius, rectus femoris, hamstrings, gluteus maximus, and the heads of the gastrocnemius).

3. Leave wound open.

4. Dressing should be placed loosely in the wound, not packed.

5. In large wounds, immobilize the part by adequate splinting even in the absence of fractures.

(2) Head Wounds.

(a) These should be considered as priority cases for evacuation to nearest hospital where adequate surgical treatment and postoperative care are feasible. A transport time of 48 to 72 hours does not contraindicate evacuation or justify operation forward of an evacuation hospital.
Before evacuation treat as follows:

1. Gently separate edges of scalp, remove superficial dirt and blood clot, and cover with sterile gauze.

2. While gauze is held in place, shave scalp for three inches around wound and wash skin with soap and water.

3. Remove gauze, frost wound with sulfanilamide, and apply large secure dressing.

(b) Surgical treatment in hospital.

1. Carefully debride scalp but conserve as much skin and subcutaneous tissue as possible.

2. Bone defect may be enlarged if necessary but avoid extensive bone flaps.

3. Loose bone fragments and accessible foreign bodies should be removed.

4. Damaged brain tissue may be removed by gentle irrigation and suction.

5. These wounds should not be packed but closed around a small drain.

(3) Face. (a) Maintenance of a clear respiratory airway is an important consideration in these cases before evacuation. If patient cannot sit up, evacuate in the prone position. In some cases tongue traction by means of a suture or safety pin may be necessary.

(b) Surgical treatment. 1. Every effort should be made in operating on these wounds to conserve tissue in order to facilitate subsequent reconstructive procedures. Foreign bodies and completely detached fragments of bone and teeth are removed but fragments of bone which still have some attachment to soft tissue are conserved.

2. In contradistinction to the general rule of leaving war wounds open these wounds should be closed if this can be done without exerting undue tension.

3. If the defect is such that primary closure is not possible and the wound enters the buccal cavity, the edges of the skin and mucous membrane should be carefully approximated. In cases in which there is an opening into the buccal or nasopharyngeal cavities complicated by a compound fracture no attempt should be made to suture the wound but the mucous membrane may be approximated if possible. Approximation of lacerated soft parts by bandage and adhesive strips is preferable in these cases.

(4) Chest. (a) Sucking wounds of the chest demand immediate closure. This should never be done by suture unless adequate debridement of the chest wall is possible. As an emergency measure closure is best effected by the application of a pad of gauze heavily coated with vaseline and folded to fit the wound and held in position by a few sutures through the skin. Over this a supportive gauze dressing should be strapped securely. These patients should have priority in evacuation to hospitals.

(b) Novocain block of the intercostal nerves supplying the injured area is an especially useful procedure not only in simple rib fractures and "stove-in-chest" but also in other chest injuries in which pain of the chest wall is an important factor.

(c) The occurrence of tension pneumothorax should always be considered. It may be relieved by aspiration or release of air through a needle introduced into the chest through the second or third interspace anteriorly. This may also be accomplished by inserting a small catheter into the chest and connecting it with a finger cot or condom valve.

(d) In the management of simple hemothorax conservatism is desirable. Except in progressive hemorrhage, simple aspiration is sufficient to relieve respiratory embarrassment. Air replacement will not be done. Within a few days and when the danger of secondary bleeding is past the pleural cavity should be emptied of blood by two or three aspirations on successive days.

(e) When thoracotomy is performed, an effort should be made to remove large foreign bodies. Operation in these cases should be preceded by roetgenographic examination.

(5) Abdomen. (a) Because of the importance of early operation in penetrating wounds of the abdomen and the fact that these patients do not tolerate early transportation after operation, these cases should be evacuated direct and as soon as possible to the nearest hospital where adequate surgical treatment and postoperative care are feasible.

(b) Cases requiring abdominal operations should not be moved for five to seven days after operations.

(c) In view of the frequency with which missiles producing penetrating injuries of nearby regions such as the thigh, buttocks, and chest lodge in the abdomen, all such cases should have roentgenographic examination of the abdomen.

(d) In penetrating wounds of the abdomen general anesthesia will be used wherever possible in preference to spinal anesthesia.

(e) In large bowel injuries, the damaged segment will be exteriorized by drawing it out through a separate incision, preferably in the flank. In order to facilitate subsequent closure the two limbs of the loop should be approximated by suture for a distance of about 2-1/2 inches and then returned to the abdomen leaving the apex exteriorized with a short length of rubber tubing or other suitable material beneath it. If the segment cannot be mobilized the injury should be repaired and a proximal colostomy done.

(f) Penetrating injuries of the rectum should have exploratory laparotomy and posterior drainage by excision of the coccyx and incision of the fascia propria.

(g) Perforating wounds of the bladder require repair and drainage of the urine by suprapubic cystostomy or perineal urethrostomy. The space of Retzius should always be drained.

(h) Postoperatively, suction on an indwelling gastroduodenal tube is recommended and every effort should be made to prevent vomiting and distention and to promote physiologic rest of the alimentary tract.

(6) Extremities. (a) Soft parts. The principles of treatment are the same as previously stated.

(b) Nerves.

1. In view of the fact that extremity wounds constitute 75 per cent of all battle injuries and that 12 per cent to 15 per cent of all extremity wounds are complicated by injury to major nerve trunks, the possibility of nerve damage should always be considered. Effort should be directed toward early recognition of the existence of nerve injury and suitable notation must be made on the E.M.T. tag or on a cast in order to facilitate proper evacuation and the necessary early treatment.

2. Primary nerve suture should be done when the nerve ends are readily accessible and can be approximated without tension. If this is not possible and the injured nerve ends are identified, a sling suture of fine stainless steel wire should be placed between them or they should be anchored with similar suture material to the surrounding tissue in order to prevent retraction. The use of metal suture material here is desirable because it permits roentgenographic identification for subsequent repair.

3. In view of the irreparable degenerative changes that occur in the end plates of severed nerves, early repair of these nerves is absolutely essential. For this reason it is of the utmost importance to evacuate these patients as soon as possible to the zone of the interior where operative repair and the necessary postoperative physiotherapy can be instituted.

(c) Arteries. Peripheral vascular injuries are of special importance, particularly where major vessels are involved. In many of these cases ligation will be necessary. Ligation in continuity should not be done, but rather division between ligatures above and below the point of injury thus eliminating the danger of secondary hemorrhage, thrombosis, and vasoconstrictor influences. In the presence of thrombosis, the thrombosed segment should be excised. Localized segmental spasm of the artery should be distinguished from thrombosis. Such cases which have also been termed "concussion" or "stupeur" of the artery may follow various forms of trauma to an extremity and especially when the traumatizing agent passes near a vessel. In such cases the limb is cold, pale, and pulseless, but evidence of hemorrhage or hematoma indicating that the vessel has been lacerated is lacking. These cases respond well to debridement of surrounding traumatized tissue and to periarterial sympathectomy or sympathetic block. Postoperatively in all cases with peripheral vascular injuries vasodilatation should be induced by daily sympathetic block using one per cent

procaine hydrochloride solution. Body warmth should be carefully maintained but heat should not be applied to the involved extremity.

(d) Bones and joints. 1. Open reductions in the case of simple fractures will not be done except in general hospitals.

2. Fractures of the femur are to be evacuated from field units to the forward hospitals in the Army half-ring splints using the litter bar, ankle strap, and five triangular bandages. If it is necessary to remove the shoe, traction will not be effected by the ankle strap or hitch about the ankle but skin traction will be applied.

3. Fractures of the shaft of the femur or tibia and fractures involving the hip or knee joints will be evacuated from forward hospitals to general hospitals in the Army half-ring splint with skin or skeletal traction or in a plaster spica. The use of the Tobruk splint has received favorable comment. It is applied as follows: by means of traction, preferably skin traction, the extremity is pulled down, a plaster splint is moulded to the posterior aspect of the thigh and leg, a half-ring splint is applied to which the traction is made fast, and the extremity and splint are wrapped by several turns of plaster. The application of multiple pins incorporated in plaster is not recommended.

4. In the general hospital fractures of the femur should be treated by traction, either skin or skeletal, until enough union has been obtained to permit safe transportation to the zone of the interior in a plaster spica.

5. Fractures of the ankle and foot are best evacuated in padded posterior and lateral wire ladder splints.

6. Fractures of the humerus should be transported to the evacuation hospitals in the Thomas arm hinged splint with skin traction and triangular bandages. An alternate method is the immobilization of the arm to the side of the chest with a sling or velpeau bandage incorporating a padded external splint if available. For evacuation to a general hospital, the best method is the use of a U-shaped molded plaster splint extending from the axilla around the elbow and up the outer surface of the arm and shoulder to the neck. This is supported by bandages and a sling.

7. Fractures of the elbow and forearm should be immobilized in a posterior wire ladder or molded plaster splint extending beyond the wrist and supported by a sling.

8. Penetrating wounds of the joints should be treated by debridement with removal of loose bone fragments, irrigation of the joint cavity, and closure of the synovial membrane. The soft tissue wound down to the sutured synovial membrane must be kept open by loosely placed gauze. Whereas in the upper

extremity all loose bone fragments should be removed, in the lower extremity fragments necessary for stability and weight bearing should be preserved if possible. All joint injuries should be immobilized as stated above.

9. Fracture of the lumbo-dorsal spine should be transported with a blanket roll support under the site of fracture. Fractures of the cervical spine should have an improvised collar. This may be made using the patients' two canvas leggings with hooks of each facing to leave a smooth outer surface. The ankle notch is fitted snugly under the chin; the leggings then are tied by means of the laces and tightly wrapped in place with a bandage. This may be used for recumbent or ambulatory cases.

10. All recent casts on the extremities should be padded and should be completely bivalved before evacuation.

(e) Amputations. All primary amputations in the combat zone should be performed at the lowest level possible which permits removal of all devitalized and contaminated tissue regardless of stump length. Revision of the stump in accordance with prosthetic consideration may subsequently be performed. The open circular method of amputation is the procedure of choice in traumatic surgery under war conditions and is especially indicated in gunshot wounds and in controlling infection. Following circular division of the skin which is allowed to retract, the muscles are severed at the level of the retracted skin, the outer layers being divided first, and, as they contract, the deeper layers until the bone is reached. The bone is sawed without stripping the periosteum. These wounds must always be left open using a vaseline dressing. Skin traction to the stump must always immediately be applied following the amputation and continued until healing occurs. The flap type open amputation may be done only in cases in which early evacuation is not contemplated and subsequent closure at the same station is deemed possible.

b. Burns. (1) Principles. (a) Prevention and control of shock by the adequate use of plasma. In extensive burns, quantities of plasma up to 12 units may be required in the first 24 hours.

(b) Relief of pain with morphine. Large doses of morphine should be avoided if anoxia is present.

(c) Prevention and control of infection by aseptic precaution and by the oral administration of sulfadiazine. The initial dose of sulfadiazine should be 4 gm. Subsequent maintenance dosage should be determined by fluid intake, urinary output, and tolerance for the drug.

(d) Prevention of contractures and excessive scarring, by proper splinting and early skin grafting.

(2) First-aid or emergency treatment of burned area. Cover with sterile petrolatum or boric acid ointment, then with strips of fine-mesh gauze (gauze bandage). Over this add thick layer of sterile gauze dressing and wrap with gauze or muslin bandage to make firm pressure dressing.

(3) Treatment of burned area when patient arrives at hospital. (a) Standard operating room technique with patient and attendant fully masked will be used.

(b) Cases in which burned surface appears clean, further preparation will not be done. The use of detergents such as lard and washing and debridement will be reserved for grossly soiled burns. Small blisters should not be disturbed and larger ones drained by simple puncture. General anesthesia should be avoided if possible and pain controlled by morphine.

(c) Tannic acid and all other escharotics will not be used.

(d) The burned area will be covered with vaseline or, if this is not available, boric acid ointment and a firm pressure dressing as described under first-aid treatment will be applied. In burns of the extremities the pressure dressing should include all the extremity distal to the burn. Immobilization of the part by splinting should be affected when feasible. Unless complications develop, the dressing should not be disturbed from 10 days to 2 weeks.

c. Gas gangrene. (1) Prophylaxis. (a) Inadequate and delayed debridement and primary closure of wounds are two of the most important factors which contribute to the development of gas gangrene.

(b) Gas gangrene is particularly likely to occur in certain wounds such as compound fractures of the long bones, injuries causing extensive muscle damage, penetrating wounds of the abdomen, deep wounds of the perineum, and wounds in which the circulation of the part has been impaired. This factor of impaired circulation is especially important in certain muscles such as the gluteus maximus, the hamstrings, rectus femoris, vastus intermedius, and the gastrocnemius. Because in these muscles the blood supply is peculiar in that it is derived from only one or two sources which if cut off may result in ischemia of the entire muscle, wounds in these regions may be more frequently associated with gas bacillus infection. In performing debridement in these wounds special care should be exercised in removing devitalized tissue. Accordingly, cases of this nature especially those in which the injury has resulted in loss of the main blood supply of the part, will not be evacuated from hospitals until the danger from gas gangrene is past.

(c) The primary closure of wounds greatly predisposes to the development of gas gangrene. Leave wounds open.

(2) Treatment. (a) The most important factor in treatment of established gas gangrene is early removal of all involved tissue. This frequently necessitates excision of entire muscle bellies or guillotine amputation.

(b) Chemotherapy should be maintained.

(c) Polyvalent gas gangrene antitoxin should be administered preferably intravenously, after suitable precautions against anaphylactic shock have been taken. A minimum dose of three ampules repeated hourly at the discretion of the medical officer until six doses have been administered is recommended.

(d) Because in gas bacillus infection there is rapid destruction of erythrocytes, whole blood transfusions should be used.

d. Chemotherapy. (1) The value of sulfonamides in preventing sepsis and spreading infections is emphasized. Because this depends in great measure upon the systemic presence of the drug, administration by oral or parenteral means is considered essential. Sulfadiazine is considered the drug of choice. An initial dose of 4 gm. administered orally as soon after injury as possible is recommended. Maintenance dosage of one gm. every four hours should be used if adequate kidney function can be assured.

(2) The untoward reactions and complications of sulfonamide therapy should be thoroughly realized. Of these the most important are the renal disturbances. Since the great majority of these can be prevented by an adequate urinary output, every effort should be made to maintain an output of at least 1,500 c.c. daily. If this drops to below 1,000 c.c. or if microscopic hematuria develops sulfonamide therapy should be stopped.

For The Surgeon General:

ROBERT J. CARPENTER,
Lieut. Colonel, Medical Corps
Executive Officer.

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Public Health Foreign Report:

Disease	Place	Date	Number of Cases
Smallpox	Algeria	Dec. 1-10, '43	122
	Indochina	Dec. 1-20, '43	204
	Mexico, Torreon	Jan. 1- 8, '44	9
		Jan. 8-15, '44	10

Public Health Foreign Report: (Cont.)

Disease	Place	Date	Number of Cases
Typhus Fever	Algeria	Dec. 1-10, '43	33
	Curacao	Jan. 1- 8, '44	1
	Hungary	Nov. 27-Dec. 4, '43	19
	Rumania	Dec. 16, '43-Jan. 7, '44	690
	Spain	Nov. 20-27, '43	19
Yellow Fever	Cape Verde Islands, Praia	Jan. 18, '44	1 (suspected)
	On vessel At Lisbon	Jan. 21, '44	(cases on board)

(Pub. Health Rep., Feb. 4, '44.)

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Reports on Research Projects at the Naval Medical Research Institute Available for Medical Officers:

X-110B Amoebicidal Efficiency of Various Sterilizing Reagents for Water in Canteens.

X-134 The Step-Up Test to Evaluate Fitness for Physical Exertion in Healthy Men, Report No. 2.

X-154A Report of an Investigation of Carbon Monoxide Concentration in the Hangar Space and Ready Room of Escort Aircraft Carrier. (Confidential).

X-159 The Design and Construction of a Simplified Electronic Flicker-Fusion Apparatus and the Determination of Its Effectiveness in Detecting Anoxia.

X-161 Dental Anesthesia Induced by Local Refrigeration.

X-203A Testing of Goggles (TED No. UNL 2533) Electrically Heated Single Aperture Type - Manufactured by General Electric Company.

X-257 Physiological Appraisal of the British Oxygen Mask, Type "H".

X-273 Physiological Appraisal of A-10A Oxygen Mask.

To: All Ships and Stations. BUMED-Y-HS
P2-2/NN(103)

Subj: Control of Streptococcal Diseases. 26 January 1944

1. The Bureau is developing principles for the prevention and control of diseases susceptible to sulfonamide prophylaxis by the use of sulfadiazine. This program is being instituted at several of the larger naval activities and although preliminary reports of the program are quite favorable, the method has not been standardized at the present time. Large-scale prophylaxis therefore is contra-indicated.

2. In order to control the program it is directed that no naval activity institute a sulfonamide prophylaxis program for any purpose without prior approval of this Bureau.--BuMed. Ross T. McIntire.

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To: All Ships and Stations. FS/L1-2(012), F-LC

Subj: Ship Medical Department Allotments, Fiscal Year 1945. 11 February 1944

Ref.: (a) Manual of the Medical Department, U. S. N.
(b) Navy Department Bulletin of 31 December 1943, R-1747.

1. Annual Medical Department allotment for the fiscal year 1945 is provided, for each vessel in commission, as at 1 July 1944, as follows:

FY 1945 ALLOTMENTS

Category	Medical Dept. Allotment	Category	Medical Dept. Allotment
AD	$480.00	ARG	$240.00
AE	60.00	ARH	480.00
AF	60.00	ARL	240.00
AG	60.00	ABSD.	240.00
AGC	360.00	AS	480.00
AGP	240.00	AV	240.00
AGS	60.00	AVP	72.00
AK	60.00	BB	480.00
AKA	240.00	CA	240.00
AKN	72.00	CB	360.00
AKS	96.00	CL	240.00
AKV	72.00	CM	96.00
AN	60.00	CV	480.00

FY 1945 ALLOTMENTS (cont.)

Category	Medical Dept. Allotment	Category	Medical Dept. Allotment
AO	$60.00	CVE	$240.00
AP	1,200.00	CVL	360.00
APA	1,500.00	LSD	60.00
APH	2,400.00	PF	60.00
AR	600.00	PG	60.00
ARB	240.00		

2. The amounts indicated under Medical Department allotment in paragraph 1 constitute allotments of the appropriation Medical Department, Navy, to each vessel in the respective classes. Each allotment is divisable into four equal quarterly apportionments, and availability for obligation is so limited. An allotment card will not be issued. Ships commissioned during the fiscal year will be granted automatically, without further reference to this Bureau, a pro rata share of the annual allotment. (E. g., a "CV" vessel commissioned during July would receive a full year's allotment. If commissioned during the month of August, the vessel would receive 11/12 of the annual allotment, etc.) Requests for allotment changes will be governed by paragraph 3022 (h) of reference (a). Allotment numbers will not be assigned to ships. In making requests for changes in allotment, the name of the appropriation (Medical Department, Navy) shall be stated, together with the fiscal year and the quarterly period in which change is desired.

3. It will be noted, in paragraph 1, that there are no medical supply depot credits established. Inasmuch as the Materiel Division, Bureau of Medicine and Surgery, has set up a system for recording and reporting all issues of medical supplies by medical supply depots and storehouses to ships and shore stations, beginning with the fiscal year 1945, it will not be necessary to continue the granting of medical supply depot credits. Your attention is invited to the instructions in paragraph 3069 of reference (a). These instructions, as modified by current directives, govern the quantities of medical supplies to be carried in stock by ships and shore stations. No entry shall be made on NavMed Form "B" in column headed "Supply Depot" of table 1.

4. Hospital ships, not included in the categorical list, will receive customary Medical Department allotment authorization, under estimate procedures as required by paragraph 3012 of reference (a).

5. Certain types of small vessels rarely require medical stores other than those listed in the supply catalog. It is intended that such vessels will be furnished necessary medical treatment and stores by the shore station, base, tender, or larger vessel to which regularly or temporarily assigned for operations or other purpose on a transfer basis. During periods in transit or on detached service,

such vessels may obtain medical stores from any naval Medical Department activity, in the following order of preference: (1) Shore stations or bases regularly supplying similar vessels; (2) any shore station or base; (3) any NavMed-SupDep or storehouse; (4) other ships. Activities receiving such requests are directed to issue such essential medical stores as may be so requested. Shore activities located at ports where such vessels frequently call shall be prepared to render this service. Financial reports will not be submitted by vessel not having an allotment.

6. Property accountability for vessels with or without allotment shall be maintained on board in the usual manner and as prescribed in paragraph 3064 of reference (a).

7. Medicines, and civilian medical, dental, nursing, and hospital services which may be required, in an emergency, for naval personnel attached to ships without allotments shall be obtained in the manner outlined in paragraph 3032 and 3045, reference (a). The appropriation chargeable is "Medical Department, Navy." Further instructions on this matter are contained in reference (b).

8. The cost of civilian medical, dental, and hospital services procured by ships having an allotment will be charged to a special Medical Department allotment maintained in this Bureau and should be reported on a separate NavMed Form "B".

9. Vessels listed in paragraph 1 shall prepare and submit an annual sundry-purchase requisition (NavS&A Form 76 and 76a). Attention is invited to paragraph 3033 of reference (a) for instructions.--BuMed. L. Sheldon, Jr.

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To: All Ships and Stations.

BUMED-Y-RBG
P3-1/P3-2(064-42)

Subj: Venereal-Disease Educational Leaflets, Distribution of.

15 February 1944

Ref.: (a) General Order 14, 13 May 1935.
(b) General Order 156, 13 Oct. 1941.
(c) Joint ltr. NAV-147-RNC-P3-1(85), BuMed P3-2/AT13(021-40), 25 Mar 1942.

1. Reports to BuMed indicate that the venereal diseases continue to constitute a major problem in preventive medicine. Statistical data for the calendar year 1943 indicate that an upward trend in the incidence rate may be anticipated. It is essential, therefore, that all methods of venereal-disease control, as outlined in references (a), (b), and (c), be intensified, especially with respect to educational activities.

2. To aid in the indoctrination of all personnel in the basic facts of venereal disease, with special emphasis on prevention, BuMed has prepared a group of six educational leaflets which supersede the pamphlet "Sex Hygiene and Venereal Disease." These leaflets will be distributed at approximately monthly intervals over the next 6 months. Ships and advanced bases will be furnished leaflets to the extent of 30 per cent of complement. All naval districts and river commands, and air and amphibious training commands (continental), will be furnished leaflets to the extent of 50 per cent of complement. Bulk supplies will be delivered to district and command headquarters for redistribution to stations under their jurisdiction. Navy, Marine Corps, and construction recruit training centers will be furnished leaflets sufficient for 100 per cent of present and future complements.

3. The senior representative of the medical department of each ship and station is responsible, with the approval of the commanding officer, for ultimate distribution of leaflets. All personnel are to be given an opportunity to read each leaflet.

4. During 1943 more than one-third of a million sick days were recorded for new admissions of venereal disease, not including sick days of cases developing complications. It has been demonstrated that a significant proportion of all venereal-disease infections can be prevented by aggressive application of educational and prophylactic measures. Thus every patient admitted for venereal disease must be considered a failure of educational discipline. The tactical implications of venereal-disease casualties should not be underestimated. Therefore, as emphasized in paragraph 6 of reference (b), the application of an effective educational prophylaxis must be considered a continuing responsibility of the medical department and commanding officers.--BuMed. L. Sheldon, Jr.

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